



**NAStorage
Administrator Guide**

SmartSync

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What is SmartSync?

NAStorage features SmartSync, which allows you to synchronize data stored on one NAStorage to another NAStorage, or even to multiple NAStorage servers.

There is always a "master" NAStorage 'Local folder for SmartSync' which is where the source files are stored. Then there is at least one "slave" NAStorage 'SmartSync Point' which is where the destination files are stored.

The "master" and "slave" can be one single NAStorage, which would be useful if you want to replicate data from one share to another 'backup' share on the same NAS.

Most uses will be to replicate data to a separate NAStorage. Any NAStorage which is reachable on your network (private, public, internet/intranet, etc) is a candidate for SmartSync synchronization.

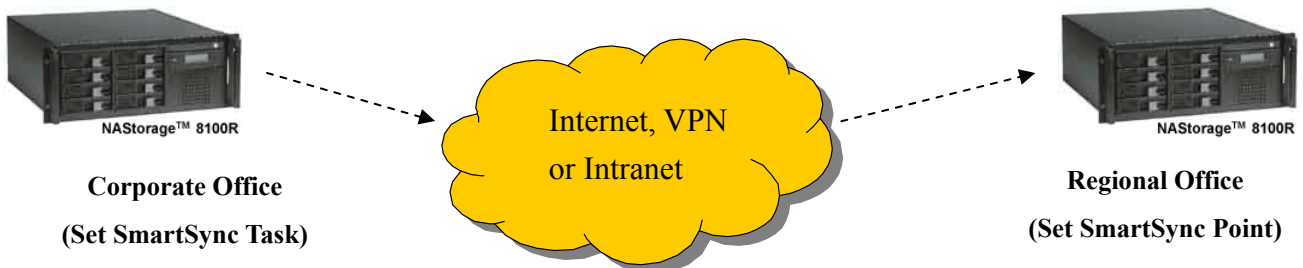
You can setup multiple SmartSync tasks and multiple SmartSync Points, and run them on a scheduled basis, automatically without intervention on your behalf.

The data is always "mirrored", so when a source file is deleted and the SmartSync task runs next, the destination NAStorage will be instructed to delete that file it has on its drive as well.

SmartSync communications are securely transmitted use SSL encryption. You can optionally compress the traffic, limit the bandwidth usage (in KB/sec), enable or disable file security permissions to be retained on the destination, and even setup a filter of include and exclude wildcard filenames.

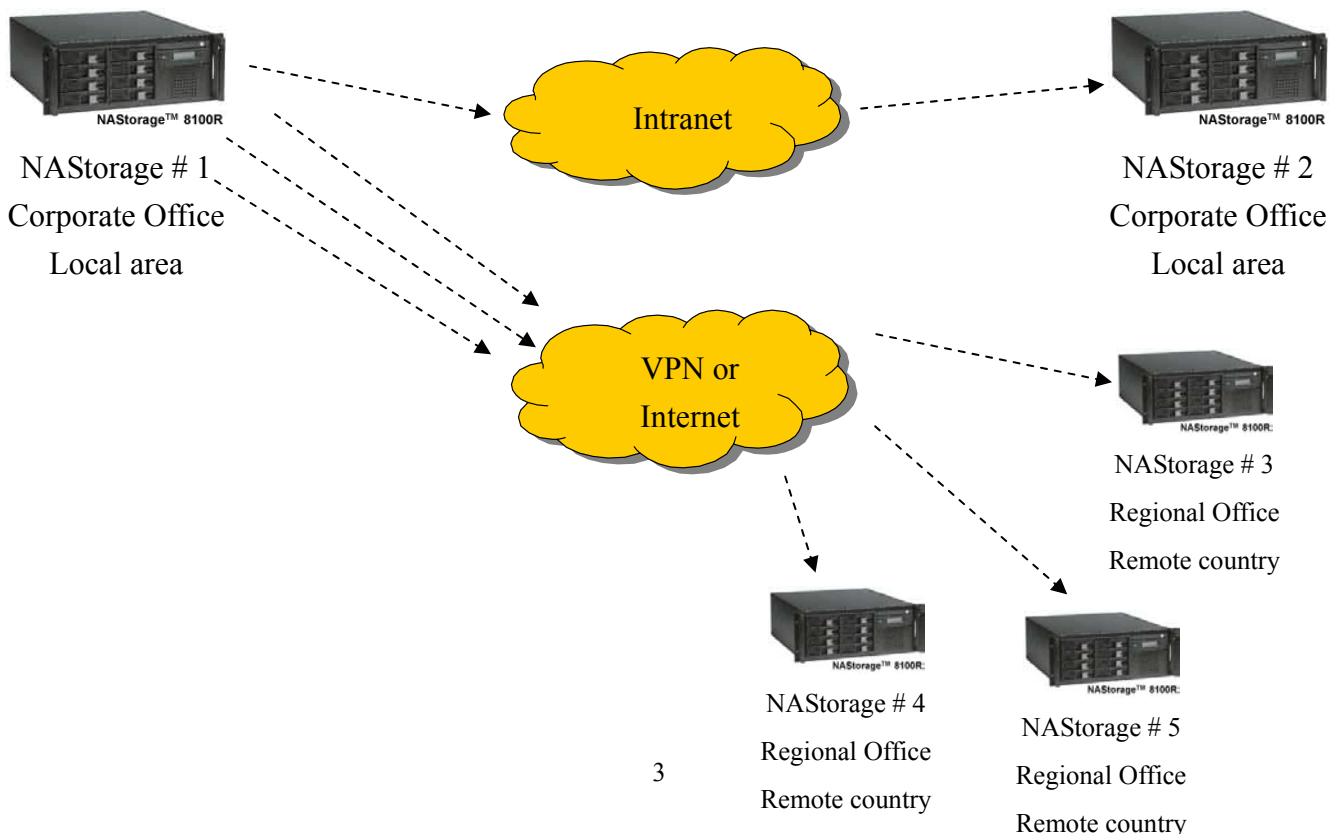
Scenario 1:

Corporate Office located in local area will synchronize critical files to a Regional Office in remote country. The SmartSync task runs Mon-Fri after-hours on the local area NASStorage server. Communication is over the Internet via secure encrypted and compressed transmission.

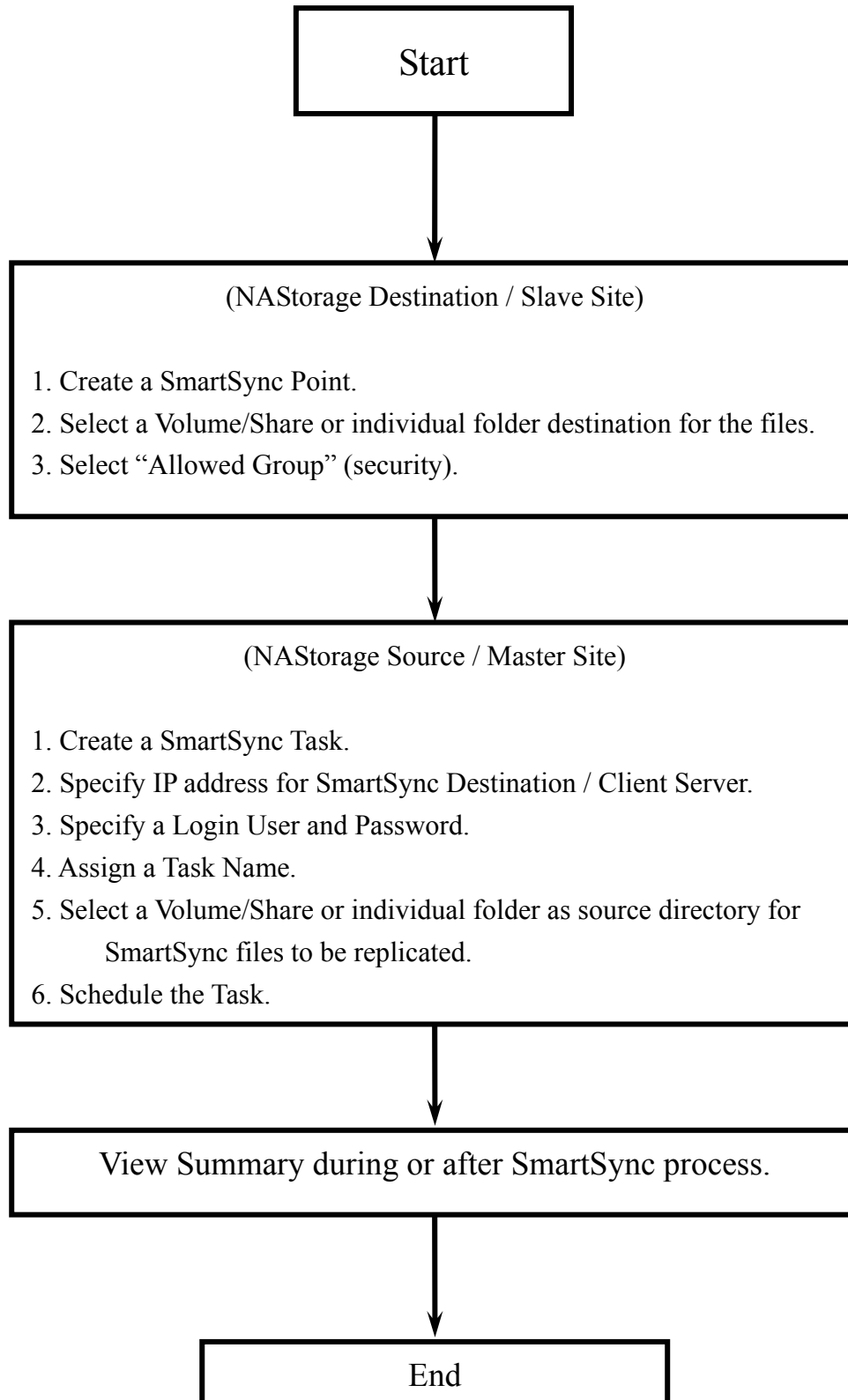


Scenario 2:

Corporate office located in local area will synchronize all data on NASStorage # 1 to a backup NASStorage # 2 located near-by for extra fault-tolerance and disaster recovery. At the same time, NASStorage # 1 will also synchronize critical files that need to be shared to several regional offices. Communication for the first task is over the Intranet, while the remaining tasks are performed mostly over the Internet. All communication is secure and encrypted.



Operating Flow Chart



How to implement a SmartSync Task

The next few pages will show you the exact process of creating a SmartSync Point on the Slave NASStorage units, and then creating the SmartSync Task on the Master NASStorage.

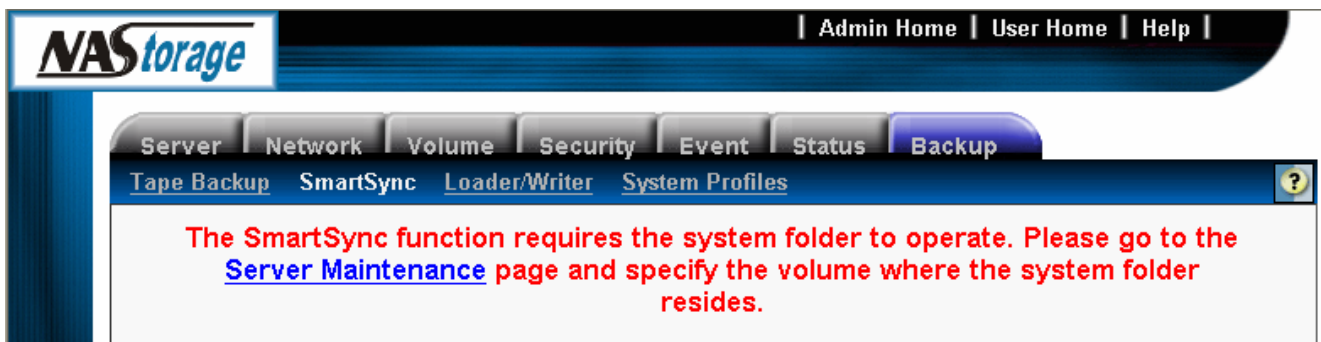
Important Note:

The SmartSync Point's are defined on the destination "Slave" NASStorage(s). These define where the destination files will be stored on the NASStorage(s).

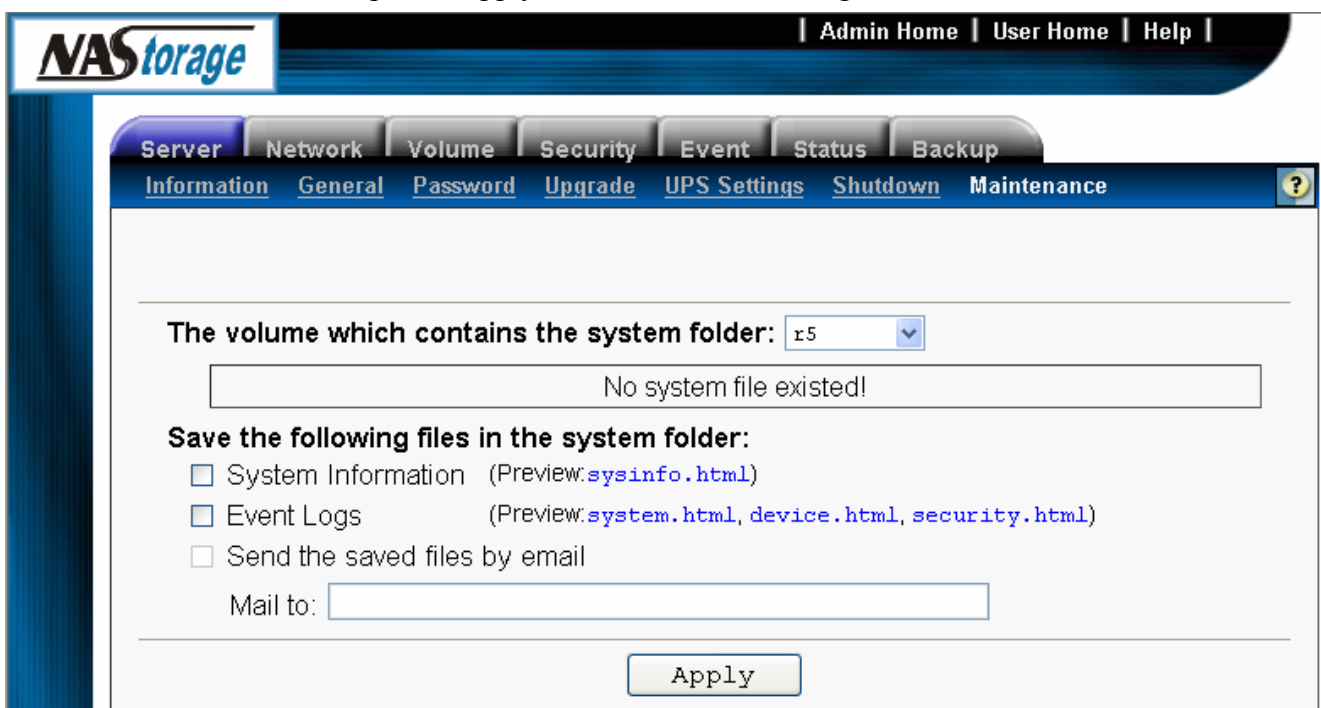
The SmartSync Task is created and scheduled on the source "Master" NASStorage. This is the NASStorage unit in which the files you want to synchronize are stored on. This NASStorage unit will synchronize to the other SmartSync Point(s).

1-1. Setting SmartSync at the first time.

Before setting up SmartSync at the first time, one has to create a System Folder in any one of the volumes. This folder will be used to record a summary of every task that is performed by SmartSync.

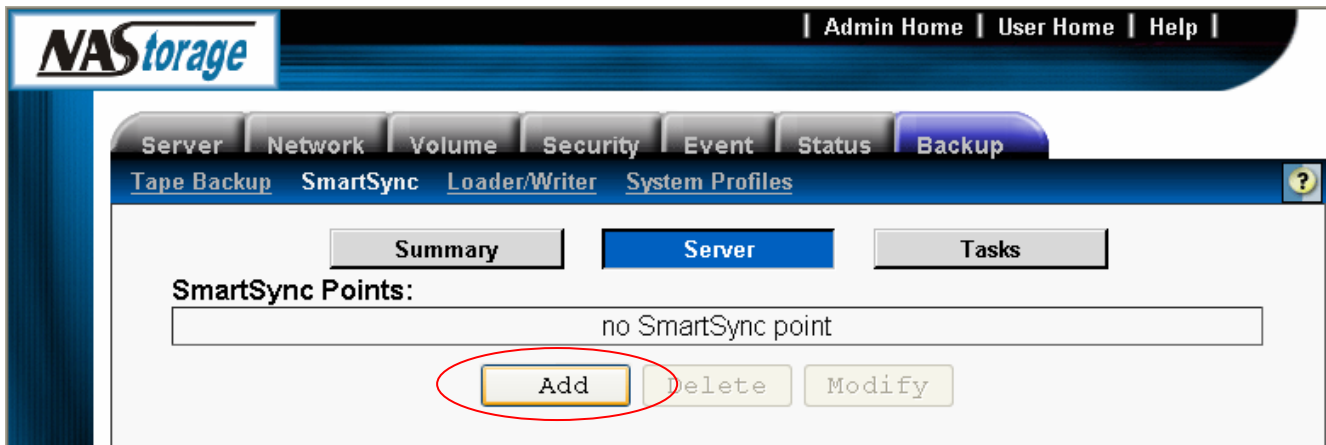


1-2. As shown in the graph, choose a volume where the System Folder will reside in the Service Maintenance screen and press "Apply" to have the new setting take effect.



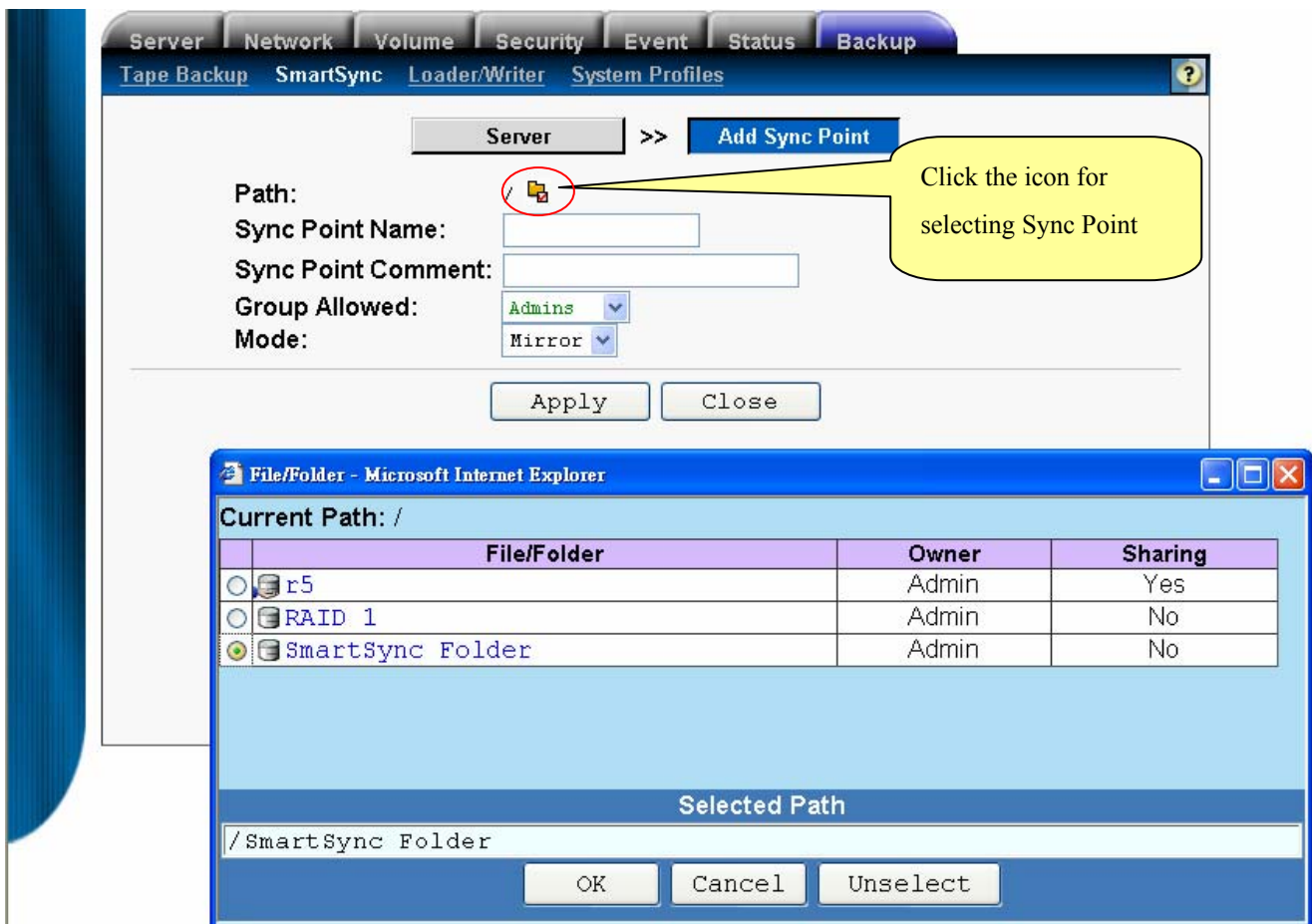
2-1. Create a SmartSync Point.

On the NASStorage Destination / Slave Server, which is the NASStorage where the SmartSync replicated files will be copied to, click the "Add" button to create a SmartSync Point.

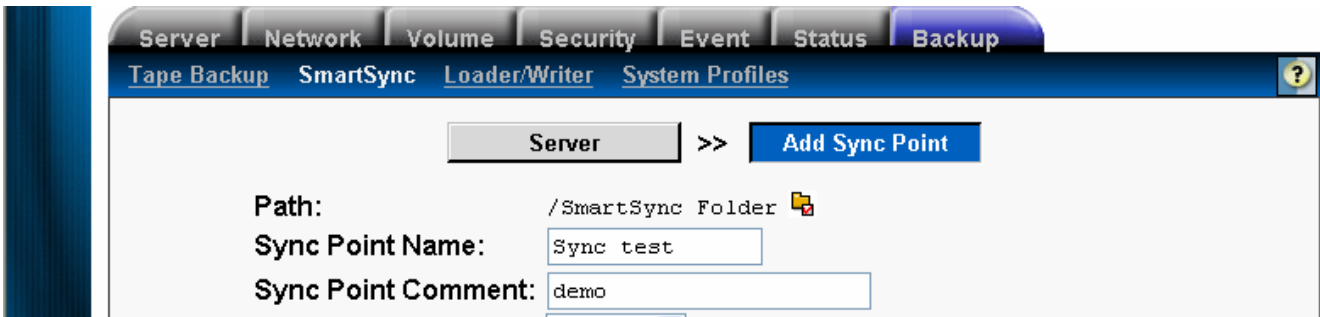


2-2. Click the icon on the "Path:" line. A pop-up box appears, and you will now select where the destination files will be stored on this NASStorage Slave.

2-3. Press the "OK" button on the pop-up window and continue to set up other parameters, including Sync Point Name, Comment, Group Allowed, and Mode.

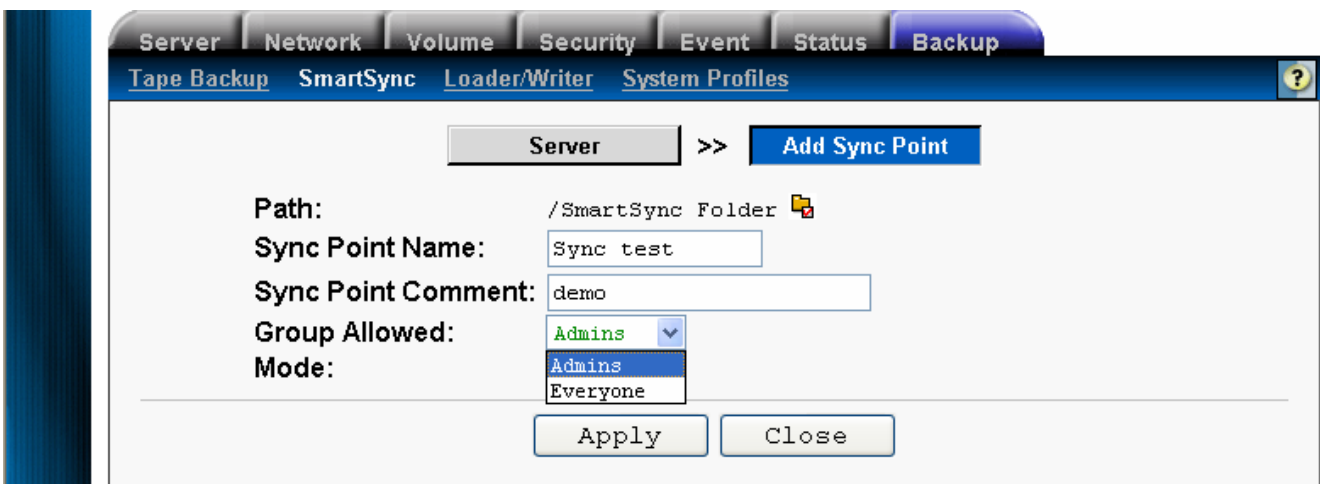


2-4. Define a SmartSync Point Name and an optional comment field.



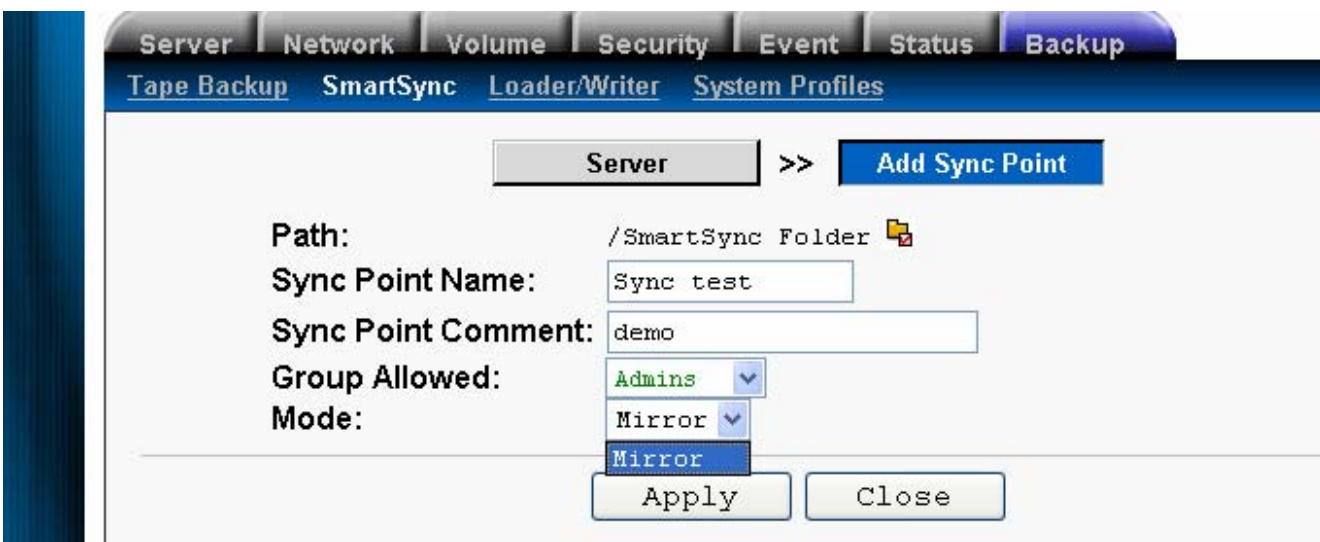
2-5. Group Allowed:

Limit access to this SmartSync Point by specifying the user groups allowed to send files to it. These are Local NAStorage groups, but you can create a Local NAStorage group which contains members from an NT/AD domain.



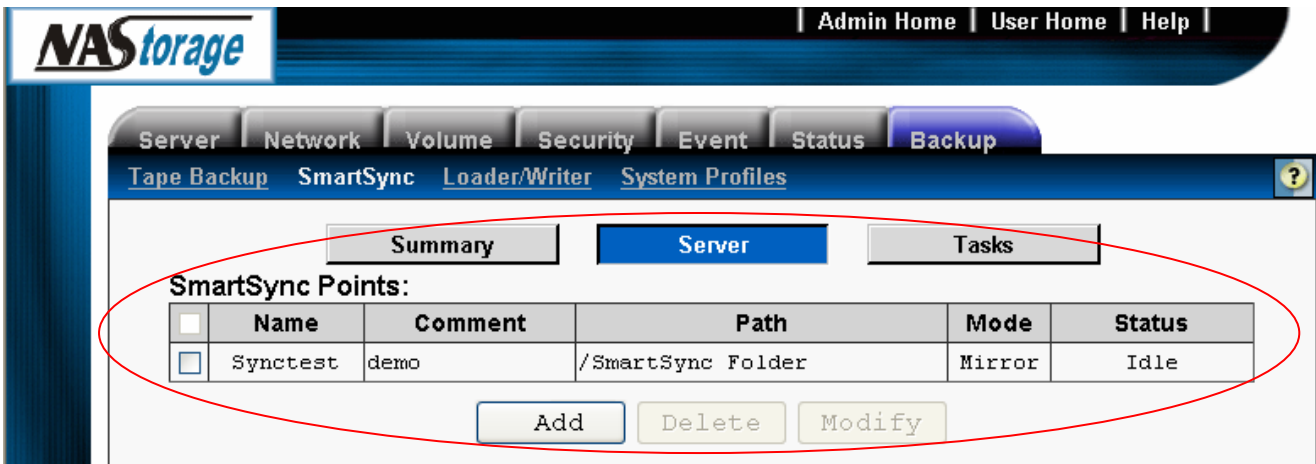
2-6. Synchronization Mode:

Currently the only Mode available is Mirror. More will come.



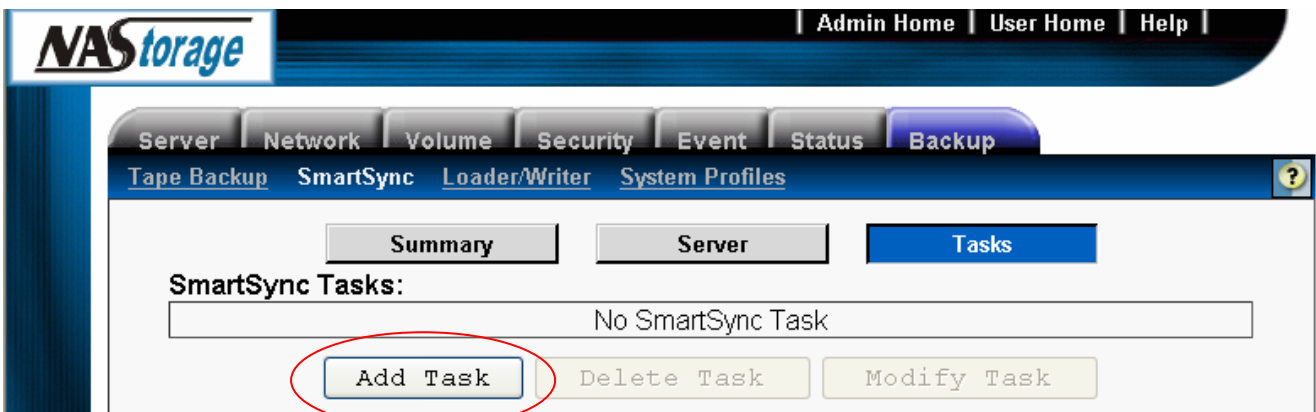
2-7. Press the "Apply" button and the SmartSync Point setup on the server side is complete.

2-8. Now we are shown a listing of any SmartSync Points on this NASStorage, including the one we just created. Up-to 8 SmartSync Points can be defined per NASStorage.



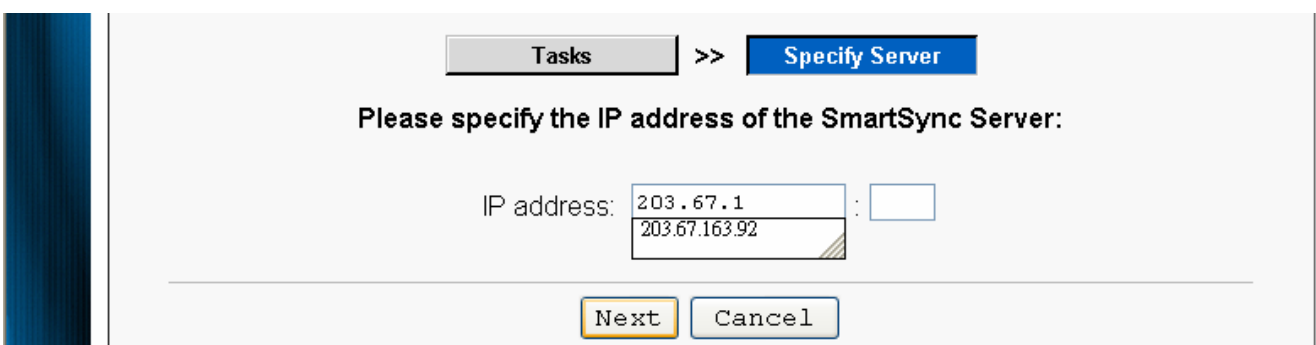
3-1. Create a SmartSync Task:

Now login to the NASStorage Source / Master server and create a new SmartSync Task. This is the NASStorage that contains the files that you want to replicate to the SmartSync Point just created in the previous steps.

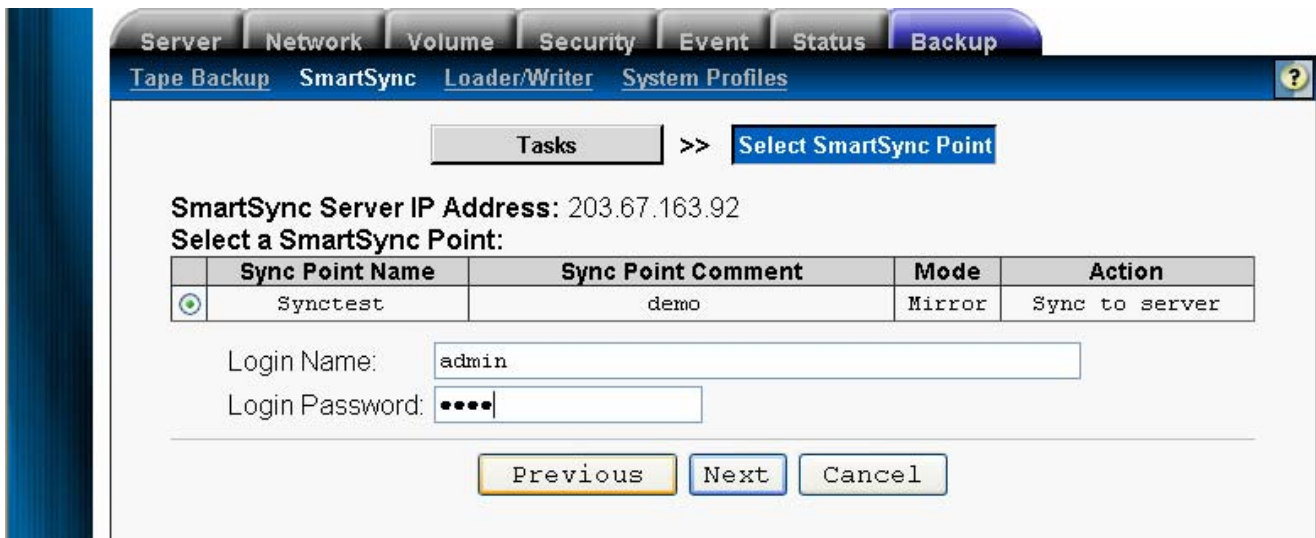


3-2. Specify the IP address of the NASStorage destination server (Slave). The second field is only if you need to remap the default port value (875) to another port for your firewall.

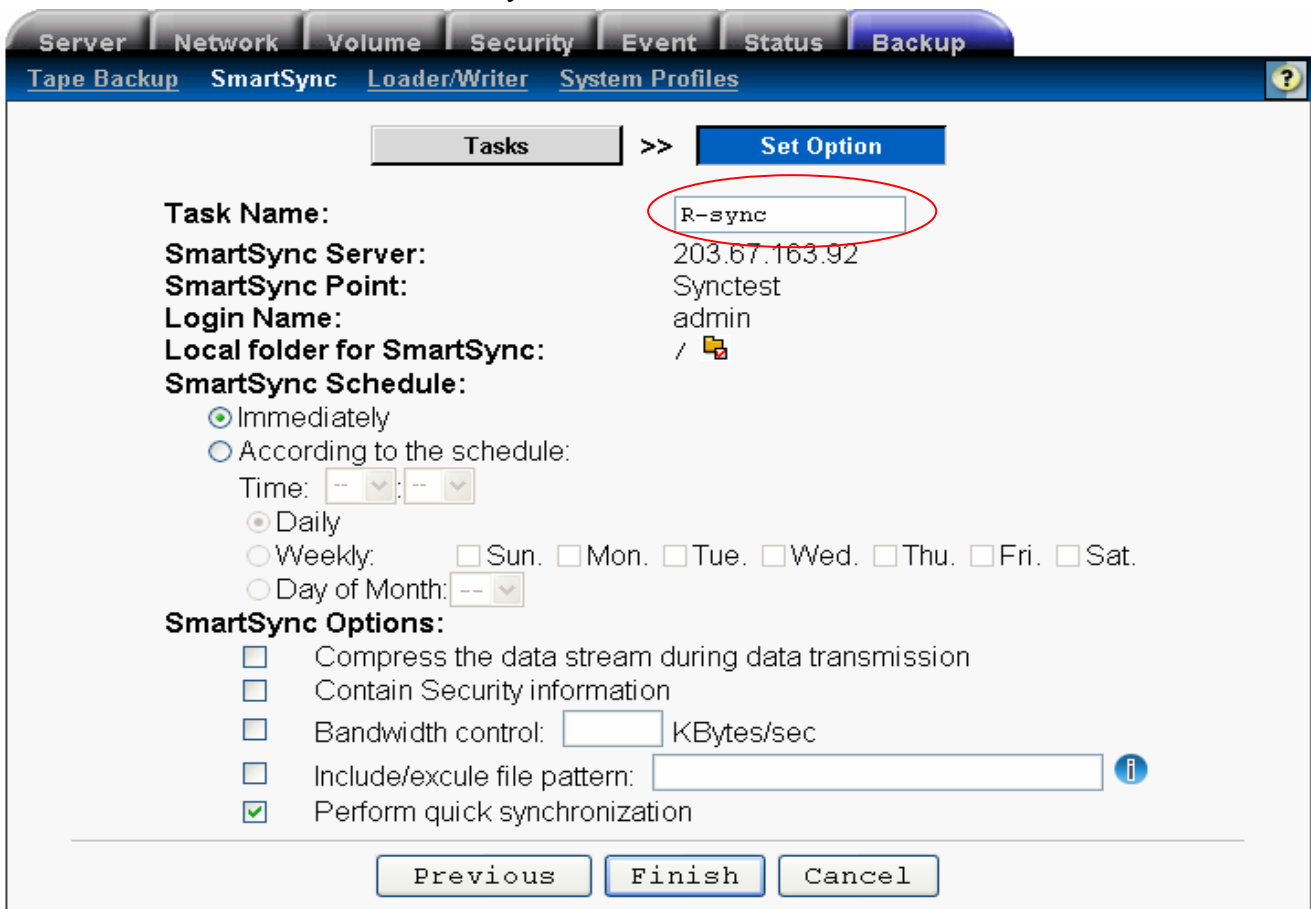
Click “Next”, NASStorage will then try to communicate with the specified IP address to verify the link is good, and show you a list of available SmartSync Points.



3-3. Select the SmartSync Point using the radio button, then specify a login name and password (The login user will need to have the login permission on the synchronized server.). Click “Next” to continue. For Domain authentication, use the format “domain\username”.

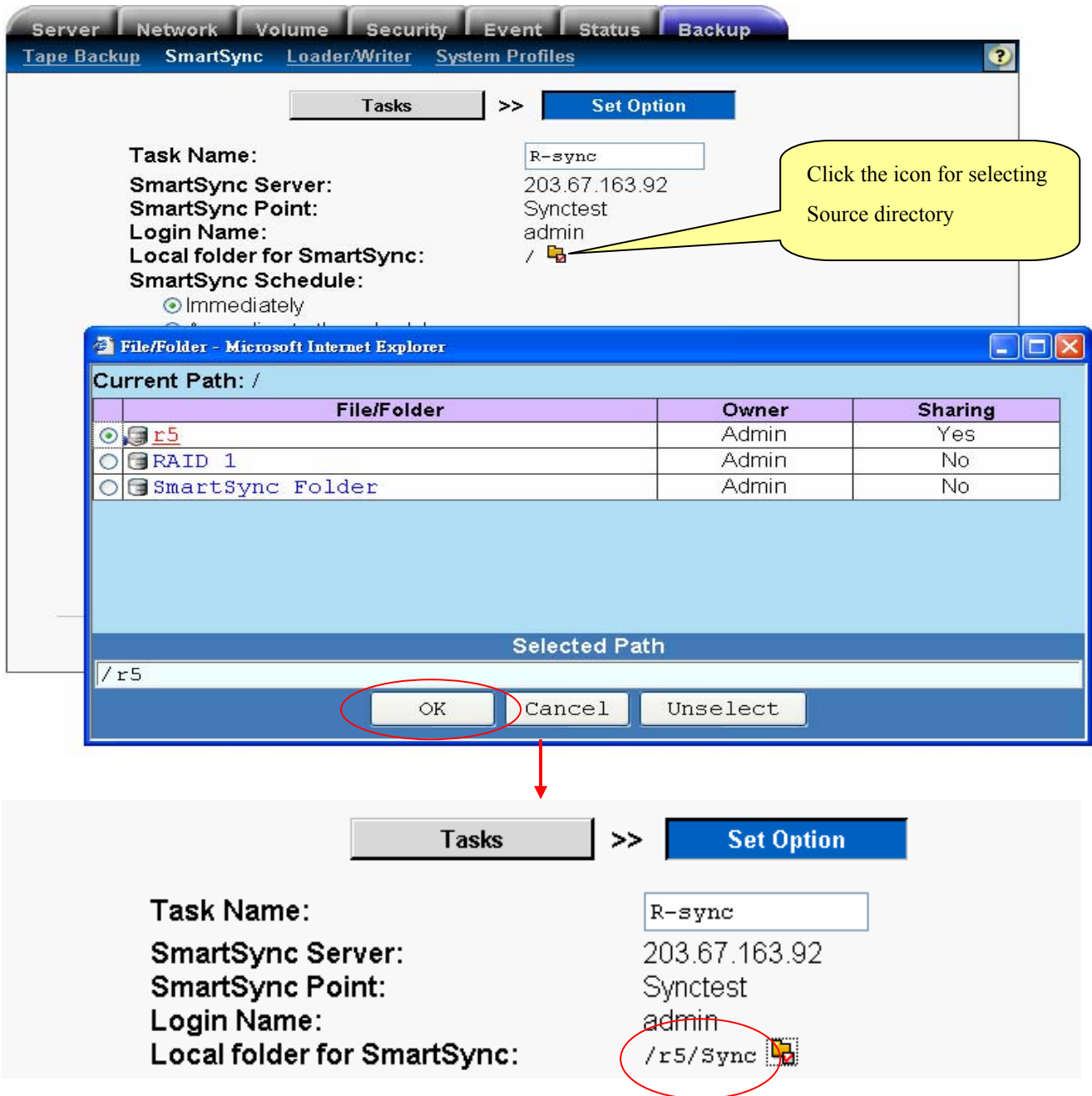


3-4. Define a task name for this SmartSync.



3-5. Click the icon on the line “Local folder for SmartSync” to choose the source Volume/Share or Folder. All contents of this, including subfolders, will be replicated to the SmartSync Point whose IP address is listed here.

A child window will pop up, allowing you to select and confirm the path to the local folder for SmartSync. Choose either the whole volume or its sub-folders then click “Ok”.



3-6. Set the schedule:

The graph below displays the schedule setup:

- A. Immediate – Perform the synchronization immediately after the setup is complete.
- B. According to the schedule – select Time, Daily, Weekly, or Day of Month to set up recurring task schedule.

As seen in the example below, the system will automatically perform SmartSync tasks everyday at 09:00(AM).

SmartSync Schedule:

Immediately

According to the schedule:

Time: :

Daily

Weekly: Sun. Mon. Tue. Wed. Thu. Fri. Sat.

Day of Month:

3-7. SmartSync Options setup:

In the current environment of the Internet, in order to transfer SmartSync's synchronization data more efficiently, we can make decisions on the following options.

- A. (Compress the data stream during data transmission)
- B. (Contain Security information)
- C. (Bandwidth control)
- D. (Include/exclude file pattern)

Ps: Online help -- SmartSync Include/Exclude File Pattern

By default, SmartSync will synchronize all files and folders under the source path. To exclude certain types of files, we should specify the include/exclude file pattern. The include/exclude file pattern are best explained by examples.

Suppose that we want to exclude all WORD files except those beginning with xyz. The include/exclude file pattern will be:

+xyz*;*.*.doc;

Each pattern starts with a minus or plus sign, and ends with a semicolon. A plus sign is for including certain file types. A minus sign is for excluding certain file types. In this example, it will exclude *.doc from being synchronized, but specifically keep those WORD files beginning with xyz. (* is a wild card, which means any characters.) Please note that the include file patterns are always placed before the exclude file patterns, otherwise the include file patterns will not take effect.

- E. (Perform quick synchronization)

SmartSync Options:

Compress the data stream during data transmission

Contain Security information

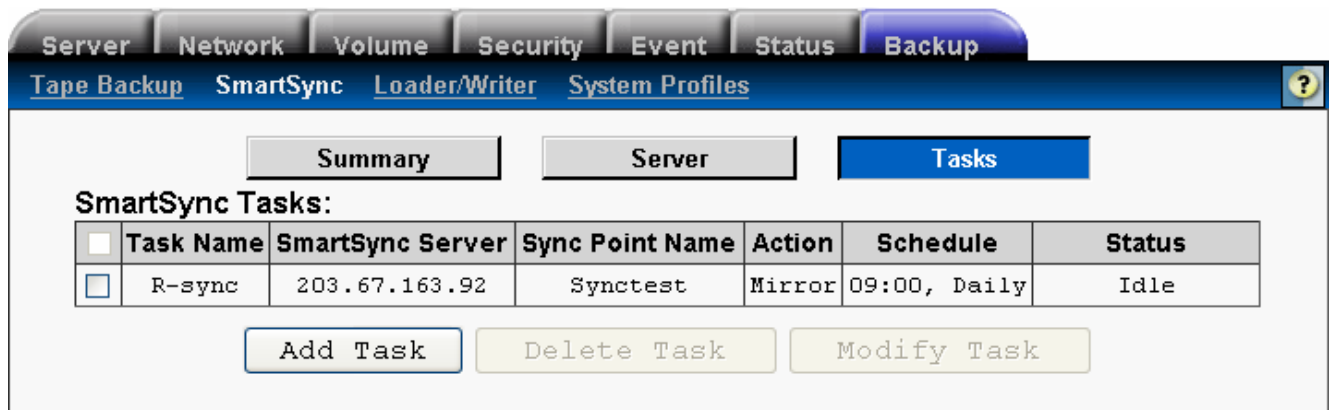
Bandwidth control: KBytes/sec

Include/excule file pattern:

Perform quick synchronization

3-8. Click the "Finish" button to complete the setup!

The graph below shows a complete SmartSync task.



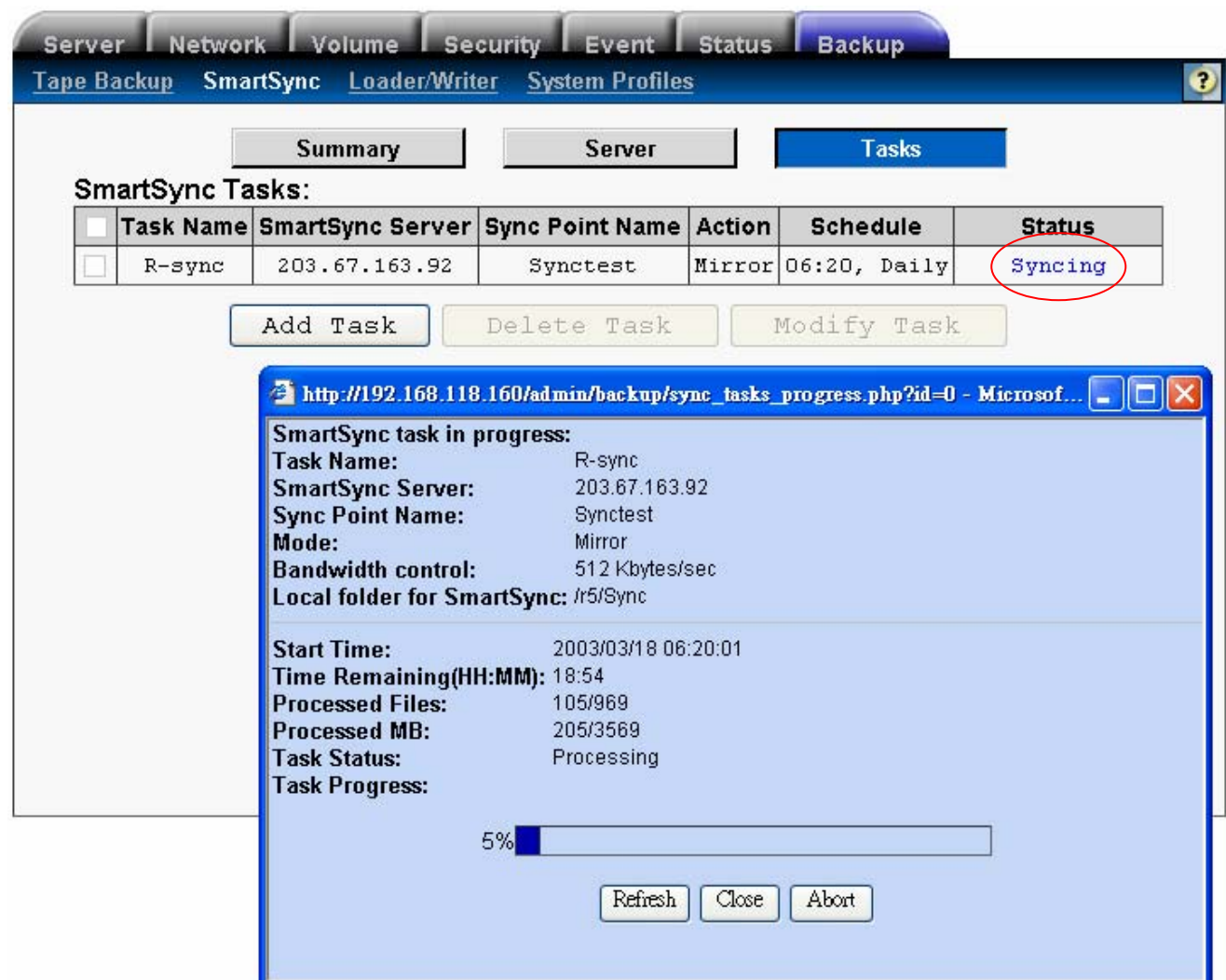
The screenshot shows the 'Tasks' tab in the SmartSync interface. A table lists the tasks, and the 'R-sync' task is currently in an 'Idle' status.

<input type="checkbox"/>	Task Name	SmartSync Server	Sync Point Name	Action	Schedule	Status
<input type="checkbox"/>	R-sync	203.67.163.92	Syncctest	Mirror	09:00, Daily	Idle

Buttons: Add Task, Delete Task, Modify Task

4-1. Checking task progress and summary.

You will be shown a quick summary of the tasks. When the task is in progress, the Status column will display "Syncing" in blue color. If you specified immediate for the schedule, click on 'Syncing' link for a new pop-up window with details while the task is in progress, as seen below.



The screenshot shows the 'Tasks' tab with the 'R-sync' task in a 'Syncing' status. A pop-up window provides detailed information about the task's progress.

<input type="checkbox"/>	Task Name	SmartSync Server	Sync Point Name	Action	Schedule	Status
<input type="checkbox"/>	R-sync	203.67.163.92	Syncctest	Mirror	06:20, Daily	Syncing


Buttons: Add Task, Delete Task, Modify Task

http://192.168.118.160/admin/backup/sync_tasks_progress.php?id=0 - Microsof...

SmartSync task in progress:

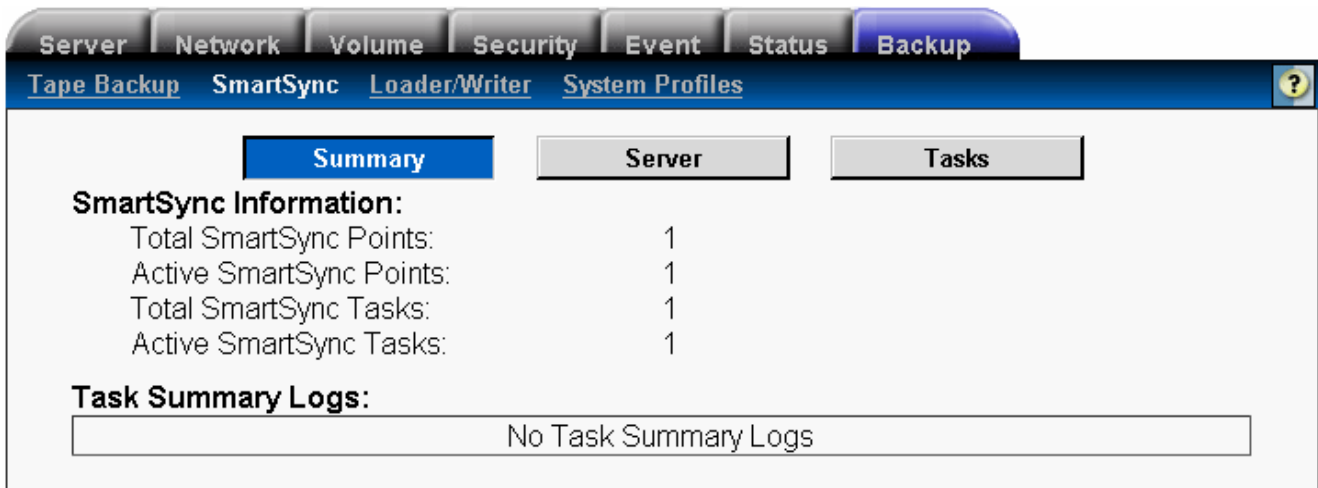
Task Name: R-sync
 SmartSync Server: 203.67.163.92
 Sync Point Name: Syncctest
 Mode: Mirror
 Bandwidth control: 512 Kbytes/sec
 Local folder for SmartSync: /r5/Sync

Start Time: 2003/03/18 06:20:01
 Time Remaining(HH:MM): 18:54
 Processed Files: 105/969
 Processed MB: 205/3569
 Task Status: Processing
 Task Progress:

5% 

Buttons: Refresh, Close, Abort

You can also go to the summary interface to check the related information about the SmartSync that is currently under way.



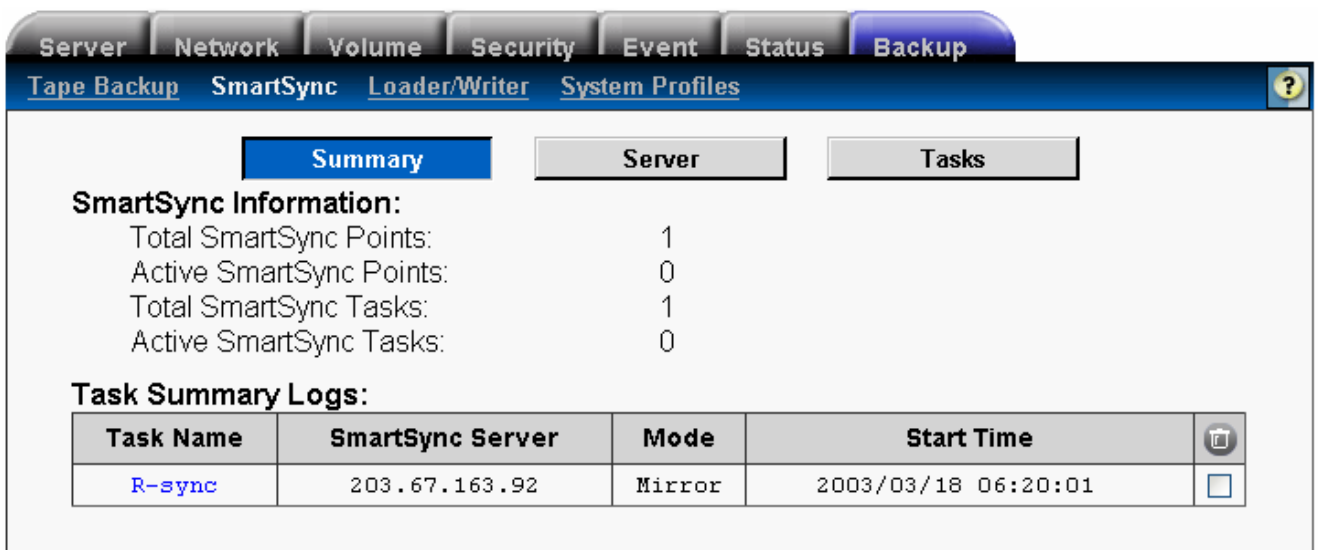
The screenshot shows the 'Summary' tab selected. Under 'SmartSync Information', the following statistics are displayed:

Total SmartSync Points:	1
Active SmartSync Points:	1
Total SmartSync Tasks:	1
Active SmartSync Tasks:	1

Under 'Task Summary Logs', a text box contains the message: "No Task Summary Logs".

4-2. View Summary after SmartSync

After the task is complete, the system will automatically keep a record in the Task Summary Logs. As seen in the graph below:



The screenshot shows the 'Summary' tab selected. Under 'SmartSync Information', the statistics are updated:

Total SmartSync Points:	1
Active SmartSync Points:	0
Total SmartSync Tasks:	1
Active SmartSync Tasks:	0

Under 'Task Summary Logs', a table displays the completed task record:

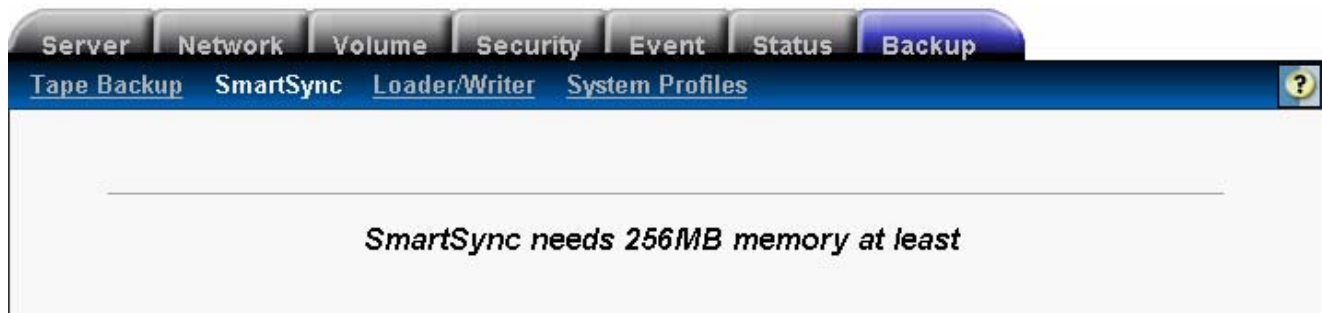
Task Name	SmartSync Server	Mode	Start Time	
R-sync	203.67.163.92	Mirror	2003/03/18 06:20:01	<input type="checkbox"/>

Event Log and Messages

Below are the possible situations when performing SmartSync tasks:

1. Memory – at least 256MB

The system needs a large amount of memory to store the names of the synchronizing files on both sides when running SmartSync, so that it can compare the names, sizes, create (modified) dates, and checksums of the files. Therefore, to run SmartSync tasks as efficient as possible, the system will rigorously check the size of the installed memory on the machine.



2. Memory does not free enough for SmartSync task operation.

Because SmartSync is a memory-consuming operation, memory utilization rate is critical when launching this task. When NASStorage detects the free memory is low, the synchronization task will be terminated by the program. To avoid this situation, we will suggest checking following configuration or timing before launching SmartSync task.

A. Add-on RAM. 512MB is suggested while 256 MB is the minimum.

B. Set the SmartSync task to perform at non-rush hour to avoid memory conflict with routine network services.

C. Set a proper SmartSync source path. If the SmartSync source includes up to millions files/directories, that will occupy most of the memory capacity when creating check list, it is suggested assigning the source path in multiple sub-directory in different tasks.

Server log:

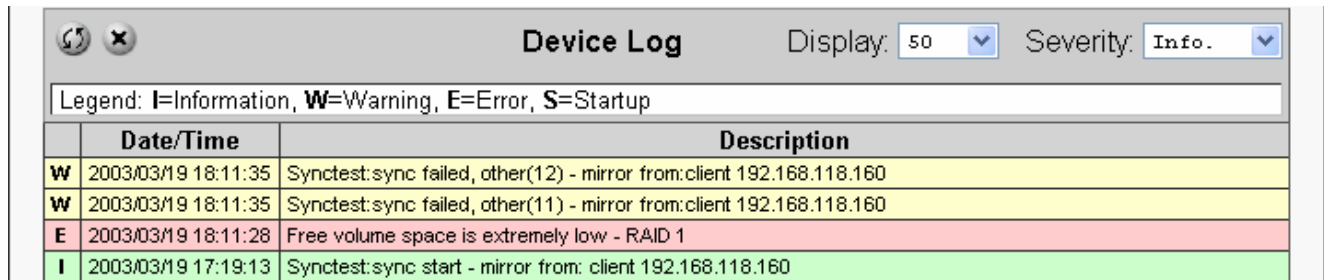
Device Log		
Date/Time	Description	
W	2003/03/18 17:25:42	send_3000000:sync failed, memory low - mirror from:client 192.168.121.226
I	2003/03/18 17:23:32	send_3000000:sync start - mirror from: client 192.168.121.226
I	2003/03/18 17:20:11	Mount volume successfully - Gemini
I	2003/03/18 17:20:04	Mount volume successfully - Aries

Device Log		
Date/Time	Description	
W	2003/03/19 13:26:08	send_3000000:sync failed, other(13) - mirror to:server 192.168.121.228
I	2003/03/19 13:23:57	send_3000000:sync start - mirror to: server 192.168.121.228
I	2003/03/19 13:20:10	Mount volume successfully - w

3. Space low

Please make sure there is enough hard disk space for the chosen sync point on the destination.

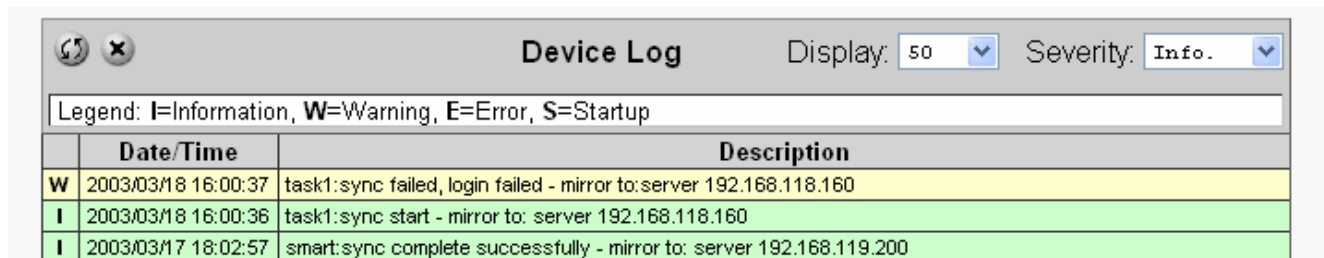
See the Event Log in the graph below.



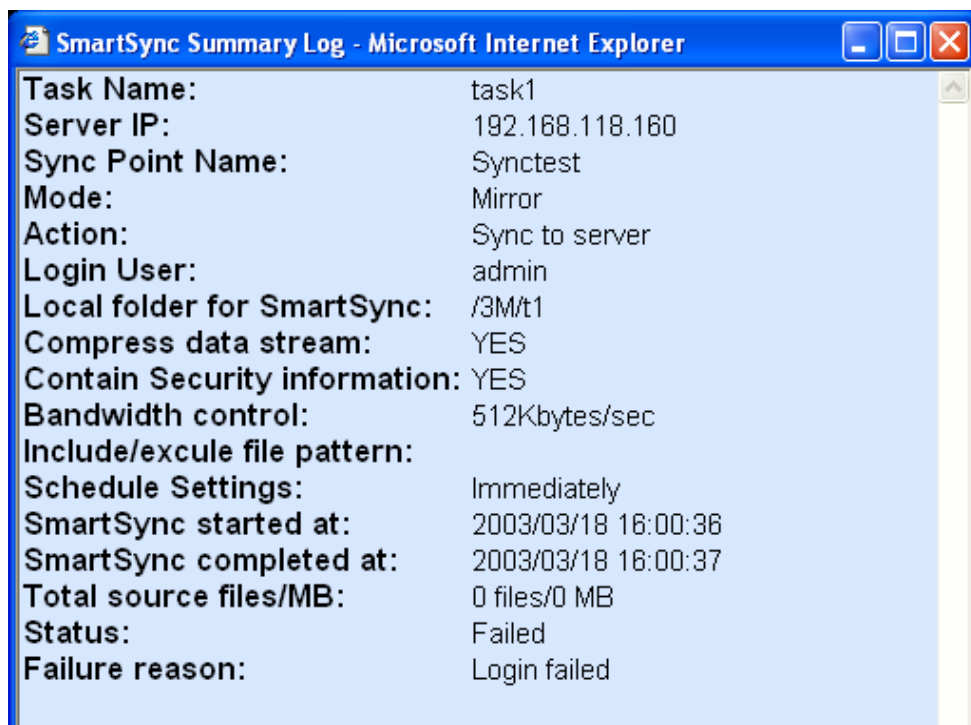
Device Log		
Legend: I=Information, W=Warning, E=Error, S=Startup		
Date/Time	Description	
W 2003/03/19 18:11:35	Synctest:sync failed, other(12) - mirror from:client 192.168.118.160	
W 2003/03/19 18:11:35	Synctest:sync failed, other(11) - mirror from:client 192.168.118.160	
E 2003/03/19 18:11:28	Free volume space is extremely low - RAID 1	
I 2003/03/19 17:19:13	Synctest:sync start - mirror from: client 192.168.118.160	

4. Login failed — maybe cause by

- A. Allow group is not set up correctly.
- B. Password is not set up correctly.



Device Log		
Legend: I=Information, W=Warning, E=Error, S=Startup		
Date/Time	Description	
W 2003/03/18 16:00:37	task1:sync failed, login failed - mirror to:server 192.168.118.160	
I 2003/03/18 16:00:36	task1:sync start - mirror to: server 192.168.118.160	
I 2003/03/17 18:02:57	smart:sync complete successfully - mirror to: server 192.168.119.200	



SmartSync Summary Log - Microsoft Internet Explorer	
Task Name:	task1
Server IP:	192.168.118.160
Sync Point Name:	Synctest
Mode:	Mirror
Action:	Sync to server
Login User:	admin
Local folder for SmartSync:	/3M/t1
Compress data stream:	YES
Contain Security information:	YES
Bandwidth control:	512Kbytes/sec
Include/exclude file pattern:	
Schedule Settings:	Immediately
SmartSync started at:	2003/03/18 16:00:36
SmartSync completed at:	2003/03/18 16:00:37
Total source files/MB:	0 files/0 MB
Status:	Failed
Failure reason:	Login failed

5. There is more than one task running on the same sync point.

Basically, a SmartSync Point does not allow other sync connection to happen concurrently when it is performing synchronization tasks.

Date/Time		Description
W	2003/03/19 14:08:03	aaa.sync failed, connections full - mirror to:server 192.168.119.200
W	2003/03/19 14:08:03	aaa.sync failed, other(44) - mirror from:client 192.168.119.200
I	2003/03/19 14:08:03	aaa.sync start - mirror from: client 192.168.119.200

SmartSync Summary Log - Microsoft Internet Explorer

Task Name: aaa
Server IP: 192.168.119.200
Sync Point Name: marktest
Mode: Mirror
Action: Sync to server
Login User: admin
Local folder for SmartSync: /3M
Compress data stream: YES
Contain Security information: YES
Bandwidth control: no limit
Include/excude file pattern:
Schedule Settings: Immediately
SmartSync started at: 2003/03/19 14:08:03
SmartSync completed at: 2003/03/19 14:08:03
Total source files/MB: 0 files/0 MB
Status: Failed
Failure reason: RSYNC_SL_CONN_FULL